

REMARKS

Claims 1-10 and 44 were pending prior to this Response. By the present communication, no claims have been added or cancelled, and claim 1 has been amended to define the invention with greater particularity. The new claim language adds no new matter, being fully supported by the Specification and original claims. Specifically, support for the phrase "having uniform diameter" may be found, among others, at paragraph [0030], in which the length and width of each capillary is based on a desired final volume. Accordingly claims 1-10 and 44 are currently pending.

Rejection under 35 U.S.C. § 112, First Paragraph

Applicant respectfully traverses the rejection of claims 1-10 and 44 under 35 U.S.C. § 112, first paragraph as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. The Examiner alleges that the specification fails to define or provide any disclosure for the recitation of "permanently bound." In order to reduce the issues and further prosecution, Applicant has amended claim 1 to delete the term "permanently." Applicant respectfully directs the examiner's attention to page 5, paragraph [0029] (as originally cited in the amendment of August 12, 2004) for support for the term "bound". Accordingly, Applicant respectfully submits that claims 1-10 and 44, as amended, comply with the written description requirement, and requests withdrawal of the rejection.

Rejection under 35 U.S.C. § 102(e)

Applicant respectfully traverses the rejection of claims 1, 6 and 7 under 35 U.S.C. § 102(e) as being anticipated by Borrelli et al (U.S. Patent No. 6,350,618; hereinafter "Borrelli"). The invention sample screening apparatus, as defined by amended claim 1, distinguishes over the disclosure of Borrelli by reciting "a plurality of parallel capillaries bound together in an array,

wherein each capillary comprises at least one wall defining a lumen having a uniform diameter for retaining a sample by capillary forces; and interstitial material disposed between adjacent capillaries in the array.”

Borrelli is absolutely silent regarding an array wherein the capillaries have a uniform diameter. Borrelli discloses a device that “has a plurality of open ended channels extending from an input face to an output face wherein at least along a predetermined length, each channel decreases equally in diameter, cross sectional area, and wall thickness.” (Borrelli, col. 8, lines 53-57; see also Figs. 1, 6, 7, 11-15 and 21). The Borrelli device is a tool for liquid deposition onto a substrate. As such, the pitch of the channels on the loading end are far larger than the pitch of the channels on the liquid delivery end. (Borrelli, col. 2, lines 52-61). Thus, Borrelli fails to disclose at least one key element of the invention screening apparatus, as defined by amended claim 1.

To establish anticipation under 35 U.S.C. § 102, each and every element of a claim must be found in a single reference. Since Borrelli fails to disclose each and every element of amended claim 1, the reference fails to anticipate claims 1, 6 and 7. Accordingly, reconsideration and withdrawal of the rejection over Borrelli are respectfully requested.

The Rejection under 35 U.S.C. § 103(a)

A. Applicant respectfully traverses the rejection of claims 1-7 under 35 U.S.C. § 103(a) for allegedly being unpatentable over Dehlinger (U.S. Patent No. 5,763,263; hereinafter “Dehlinger”) in view of Borrelli. The Examiner relies upon Dehlinger for disclosing capillaries arranged in a “close-packed array,” while non-uniform arrangement of capillaries was well known in the art. Furthermore, the Examiner asserts that the open claim language used in claim 1 encompasses any additional elements of Dehlinger, e.g. reactants on the internal walls.

Dehlinger discloses an array of capillary tubes wherein a reagent, such as DNA, is synthesized while being attached to the interior of the capillary tubes. Thus, while Dehlinger

discloses repetitively “imbibing” individual monomers (e.g., nucleotides) to be used in the synthesis of the reagents, Dehlinger does not disclose that the synthesized molecule, which necessarily has much greater molecular weight than the individual monomers of which it is built, can be “retained” within capillaries by capillary forces only because Dehlinger’s initial monomers are *attached* to the interior of the tubes making up the array. In particular, Dehlinger fails to suggest capillaries having at least one wall defining a lumen having a uniform diameter for retaining a sample by capillary forces *only*.

The disclosure of Borrelli does not cure the above-described deficiencies in Dehlinger for teaching or suggesting the claimed invention. As discussed above, Borrelli discloses a device that “has a plurality of open ended channels extending from an input face to an output face wherein at least along a predetermined length, each channel decreases equally in diameter, cross sectional area, and wall thickness.” (Borrelli, col. 8, lines 53-57; see also Figs. 1, 6, 7, 11-15 and 21). However, Borrelli is absolutely silent with regard to capillaries having a uniform diameter. In fact, Borrelli teaches away from capillaries having a uniform diameter by reciting that the pitch of the channels on the loading end are far larger than the than the pitch of the channels on the liquid delivery end. (Borrelli, col. 2, lines 52-61). Accordingly, there is no teaching or suggestion in Borrelli to modify the invention of Dehlinger to arrive at a capillary comprising a first wall defining a lumen having a uniform diameter for retaining a sample by capillary forces only.

B. Applicant respectfully traverses the rejection of claims 8-10 and 44 under 35 U.S.C. § 103(a) for allegedly being unpatentable over Dehlinger in view of Borrelli as applied to claim 1 above and further in view of Winkler et al (U.S. Patent No. 5,677,195; hereinafter “Winkler”). Applicant respectfully submits that remarks above with regard to the differences between Dehlinger in view of Borrelli and the invention defined by claims 1-7 apply equally to dependent claims 8-10 and 44 and are incorporated here. The Examiner relies upon Winkler for disclosing

that reference indicia are essential for consistent and precise positionally addressable array construction and use.

The array disclosed by Winkler is not an array of capillaries, but is instead a flat, optionally rotatable “substrate” having discrete “reaction regions” defined thereon into which a series of monomers are sequentially deposited to fabricate a substance for testing. For example, Winkler teaches that “reagents are delivered to the substrate by either (1) flowing within a channel defined on predefined regions or (2) ‘spotting’ on predefined regions” (Winkler, col. 8, lines 64-67). Alternatively, a single molecule, such as a “receptor” can be attached to each region of the substrate and then subjected to a battery of putative binding agents or ligands for the receptor on the flat array. Thus, there is no suggestion in Winkler of an array of capillary tubes wherein each capillary comprises at least one wall defining a lumen having a uniform diameter for retaining a sample by capillary forces *only* because Winkler discloses that array components are deposited at locations on a two dimensional array. Accordingly, there is no teaching or suggestion in Winkler to modify the invention of Dehlinger in view of Borrelli to arrive at Applicant’s invention.

Applicant respectfully submits that *prima facie* obviousness of the invention over Dehlinger, Borrelli and Winkler, either alone or in combination, has not been shown by the Examiner. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103 for alleged lack of patentability are respectfully requested.

In re Application of:
William Michael Lafferty
Application No.: 09/894,956
Filed: June 27, 2001
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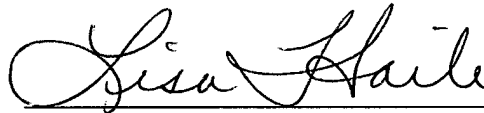
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Attorney Docket No.: DIVER1280-14

CONCLUSION

In view of the above amendments and remarks, Applicant respectfully submits that all rejections have been overcome and allowance of claims 1-10 and 44 is respectfully requested. If the Examiner would like to discuss any of the issues raised in the Office Action, the Examiner is encouraged to call the undersigned so that a prompt disposition of this application can be achieved. No fee is deemed necessary in connection with the filing of this paper. However, if a fee is required, the Commissioner is hereby authorized to charge any required fee associated with the filing submitted herewith, or credit any overpayments, to Deposit Account No. 07-1896.

Respectfully submitted,

Date: February 14, 2005



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